

According to literature (Prater 1971), *Callosciurus pygerythrus* (Geoffroy) feeds on fruit, leaf-buds and is particularly partial to oranges. In spite of the availability of abun-

dance of fruits on the trees in and around the area the preference for animal food is highly interesting.

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8, LINDSAY STREET,
CALCUTTA 700 016,
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3. UNUSUAL RAT FEEDING BEHAVIOUR ASSOCIATED WITH CATTLE AFFECTED WITH FOOT AND MOUTH DISEASE

(With a text-figure)

An epidemiological investigation aimed at revealing the possible role of rodents in the transmission of foot and mouth disease was conducted in Purulia district of West Bengal. Rats (*Rattus rattus*) and squirrels (*Funambulus pennanti*) were trapped in and around cow sheds which had harboured confirmed cases of foot and mouth disease two months previously. Their blood was collected and the serum was tested as described below.

The study utilized an immuno-diffusion test (Virus Infection Associated antigen) to detect the presence of serum antibodies specific for foot and mouth disease (FMD). Antibodies to the Virus Infection Associated (VIA) antigen cross reacts with all four types of foot and mouth disease (O, A, C and Asia₁) found in India (Cowan and Graves 1966) and is diagnostic with just a single test (unlike serum neutralization and complement fixation tests).

The results of this study demonstrated that no squirrels (10 serum samples) and no rats (47 serum samples) were infected by the FMD

virus despite an intimate association with the infected cattle. (Many villagers reported that they had seen rats feeding on the foot lesions of the FMD infected cattle when they would enter the cow shed at night.)

An unexpected result was a definite precipitation line between the unknown rat serum wells and the control bovine antisera wells in twelve out of forty-seven cases (see figure 1). This same phenomena was never observed with any of the squirrel sera.

The precipitin line between the control bovine serum and unknown rat serum depicted in the figure may be explained by various interpretations. It could be due to; a non-specific reaction, the presence of a cross-reacting antibody, a common infective process, or specific antibodies in one serum directed toward serum components of the other. The last explanation seems more plausible for the reasons outlined below.

Rats were seen feeding on the FMD lesions at which time serum substances undoubtedly

could have been ingested. It is known that mice given bovine serum orally will develop specific antibodies to certain components (Andre *et al.* 1973). No other species of animal tested (cattle, goats, sheep, chickens or squirrels) demonstrated a similar precipitin line in the VIA test. It is probable that not all rats fed on the FMD lesions or fed intense enough to become sensitized to bovine serum factors.

While the above is admittedly a conjecture, it does provide some possible scientific documentation to the villager's observation of rats feeding on the foot lesion of cattle infected with FMD.

Even though rats are considered "versatile feeders" (Barnett 1975) it is doubtful that this particular feeding behaviour has been reported before. It is unknown how common or extensive this practice is.

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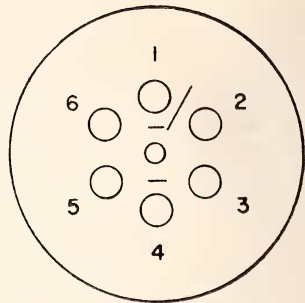


Fig. 1. Agar gel immuno-diffusion VIA antigen test for serum antibodies to foot and mouth disease.

The central well contains the VIA antigen. Wells number 1 and 4 contain known reacting control bovine antisera. Wells number 2, 3, 5 and 6 contain four different unknown rat serum samples. The line between the central well and well 1 and 4 is a positive reaction of VIA antigen and its specific antibody. The line between well 1 and 2 may be due to an antigen-antibody complex of unknown origin which occurred in 12 out of 47 rat sera tested.

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